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TASK ANALYSIS OF STATE AND LOCAL AIR POLLUTION CONTROL
AGENCIES AND DEVELOPMENT OF STAFFING GUIDELINES

VOLUME G. DETAILED TASK DATA, AND STAFFING GUIDANCE,
AGENCY MANAGEMENT, PROGRAM DEVELOPMENT, AND PUBLIC
INFORMATION SUPPORT

APPLIED SCIENCE ASSOCIATES, INC.

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

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Local Air Pollution Control Agencies and
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16. Abstracts Task data and staffing information are presented covering a group of tasks which are related to agency management and high level problem solving. The operations are performed by the occupational categories of Air Pollution Control Director, Resources Administrator, Program Planning and Development Specialist, and Public Information Specialist. The following tasks are included: (1) high level agency management; (2) agency resources management; (3) technical management; (4) literature review and data summary regarding ambient air quality standards; (5) development of new or modified regulations; (6) support of development of local control programs; and (7) preparation of a public information presentation.		14.	
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VOLUME

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AGENCY MANAGEMENT, PROGRAM DEVELOPMENT,
AND PUBLIC INFORMATION SUPPORT

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INTRODUCTION

One of the pressing problems in the air pollution control effort at Federal, state, and local levels is planning manpower requirements and developing manpower resources. Questions are being asked such as, how many people are needed, what kind of past experience and education should they have, how should their jobs be structured, what do they need to know to do their jobs, what special abilities do they need, and what kind of training should they receive to do their jobs? These questions are becoming increasingly meaningful as the control effort broadens with the creation of more and more local agencies and as existing agencies increase the scope and depth of their programs. Adequate answers are required if progress is to continue toward the goal of clean air.

In order to begin to answer questions relevant to manpower planning and development, a data base describing the tasks to be performed by control agency personnel and the skills and knowledge they must have to perform those tasks effectively must be available. Guidance concerning the use of the data base in making staffing decisions must be prepared. It is the purpose of this study to provide such a data base and the appropriate guidance.

A. Objectives

The objectives of this project were the following:

1. To identify as great a proportion as possible of the population of tasks currently being performed by air pollution control agency personnel at the state and local level throughout the country.
2. To describe the identified tasks in terms of component behaviors and the skills and knowledge required to perform those behaviors.
3. To identify and describe categories of air pollution control agency personnel who would perform the tasks mentioned above.

continued

4. To structure and communicate the data which resulted from achieving the above objectives in a form which could be used by agency management in planning and developing manpower resources.

B. General Project Overview

The project was performed in two phases. Phase I dealt with achieving the first two project objectives, and resulted in the development of a detailed data base describing the major tasks performed by agency personnel in terms of the procedural components of the tasks and the skills and knowledge required to perform them. Phase II dealt with achieving the last two major objectives, and resulted in production of a guidance document which integrates and structures data developed in Phase I and presents it in a form designed to assist agency manpower developers.

THIS IS VOLUME G:

Additional books available are:

- VOLUME A: Guidance and Supporting Information for Staffing and Training Decisions in an Air Pollution Control Agency - Introduction and Directions for Using These Guidelines
- VOLUME B: Guidance and Supporting Information for Staffing and Training Decisions in an Air Pollution Control Agency - Engineering
- VOLUME C: Guidance and Supporting Information for Staffing and Training Decisions in an Air Pollution Control Agency - Field Enforcement
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- VOLUME E: Guidance and Supporting Information for Staffing and Training Decisions in an Air Pollution Control Agency - Air Monitoring and Meteorological Support
- VOLUME F: Guidance and Supporting Information for Staffing and Training Decisions in an Air Pollution Control Agency - Source Testing

AND

TECHNICAL REPORT:

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AGENCY MANAGEMENT, PROGRAM DEVELOPMENT,
AND PUBLIC INFORMATION SUPPORT

The task data and staffing information presented in this volume cover a group of tasks which are related to agency management and high level problem solving. The operations are performed by the occupational categories of Air Pollution Control Director, Resources Administrator, Program Planning and Development Specialist, and Public Information Specialist. The following tasks are included and are located within the volume as indicated below:

1. High Level Agency Management	Page G-3
2. Agency Resources Management	Page G-25
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4. Literature Review and Data Summary Regarding Ambient Air Quality Standards	Page G-52
5. Development of New or Modified Regulations	Page G-63
6. Support of Development of Local Control Programs	Page G-75
7. Preparation of a Public Information Presentation	Page G-86

High Level Agency Management

Operation Overview

The activities involved in high level management of an agency include many tasks. These tasks are typically performed by the Director of the agency and his staff and can include input from other agency personnel at all levels. It is hypothesized here that, generally, the objectives and number of tasks required to manage the efforts of an agency will vary relatively little as a function of agency size¹. However, the complexity of the tasks (in terms of the scope of problems covered) may increase with an increase in the size of an agency's jurisdiction and degree of comprehensiveness. Because of the time stress on agency management personnel, it was not possible to collect the kind of data required to develop detailed descriptions of their tasks. But the agency directors surveyed were able to characterize their operations generally and identify many of the tasks in which they and their staffs are involved. From this raw data a general description of the operation of managing an agency was compiled and a list of general skill and knowledge requirements was developed.

Occupational Category: Air Pollution Control Director

Operation Description

Generally, the operation of high level management of an agency can be characterized as consisting of general categories of tasks (described in further detail below) including:

- Collect information required for guidance and development of agency activities.
- Make decisions concerning agency policy.
- Coordinate and direct the planning and development of agency activities.

¹This assumption applies to agencies large enough to afford the luxury of a full-time chief free to manage the agency and not required to perform or directly supervise the routine enforcement, technical, and engineering services of the agency.

- Coordinate and direct agency activities.
- Represent the agency in interaction with its constituency and governmental bodies.

These task categories are not mutually exclusive nor independent of one another. Each category contains specific tasks which an agency Director is likely to be responsible for in all types of agencies.

1. Collect information required for guidance and development of agency activities. Generally, this category of tasks is aimed at gathering the kind of information which the Director and his staff need in order to carry out their other activities. These tasks require the Director and his staff to actively or passively monitor the working environment or context in which the agency operates to determine its current limitations, opportunities for progress, and level of success. This is an ongoing activity as the working context is in a constant state of flux. The agency must maintain constant contact if it hopes to be responsive and relevant to contemporary needs and to successfully satisfy them. The sectors or elements of the agency's working context which must be monitored include:

- a. The public sector (both organized and unorganized).
- b. The industrial/commercial community whose activities are controlled by the agency.
- c. The governmental and quasi-governmental bodies which interface with the agency in performance of its duties (e.g., advisory boards, variance boards, public health department).
- d. The local, state, or federal political/economic system and the pressures it exerts.

Some of the specific tasks included in this task category are:

- a. Identify the desires and goals of the organized citizen groups and determine the extent to which they generally reflect those of the public sector as a whole.

- b. Determine the attitudes of the industrial and commercial constituency. This must be done for groups of similar companies and for specific members of these groups.
 - c. Identify the expectations and performance criteria of governmental agencies which provide funds for agency support.
 - d. Assess the degree to which the agency's constituency (public, private and governmental) is prepared for a specific change in agency policy or methodology.
 - e. Identify the status of local political or economic pressures which impact on a particular policy decision or agency action. For example, assess the effect of a local recession on a proposed vigorous effort to control a large industrial complex.
2. Develop agency policy. This category of tasks is concerned with developing guidelines and setting precedents which will influence current and future decisions. The decision making may be stimulated by a current problem which must be resolved or by an anticipated set of problems to be resolved in the future. In the former case, policy, as such, may be reflected by the specific action taken for the question at hand. A precedent or policy might then be implied. This type of policy setting is typically characterized by time stress. In the latter case, on the other hand, a more deliberate and planned approach to establishing policy can be taken. Examples of this category of tasks include:
- a. In dealing with a large local source, negotiate the general characteristics of a compliance program which will result in improved controls and commit the industry to considerable expense.
 - b. Select an enforcement action which will result in the most progressive action on the part of a large source. Depending upon local regulations, alternatives may include:
 - 1) Administrative order
 - 2) Fines

3) Court injunction

4) Civil charges

- c. Determine a course of action the agency should pursue in the case of a cost overrun by a contractor supplying equipment to the agency.
 - d. Given the limited manpower and equipment resources, determine the direction the agency will follow with regard to controlling specific sources or categories of sources. For example, at the state level, the agency might decide to concentrate its technical, engineering, and enforcement activities on a specific "target" group of sources. After that group has been sufficiently treated, then select another objective. In this case priorities must be established, probabilities of success estimated, and ensuing costs predicted.
 - e. Consult with attorneys and establish guidelines for the interpretation of specific local regulations. For example, define the conditions under which a "public nuisance" or "air pollution by definition" rule will be enforced.
3. Coordinate and direct the planning and development of agency activities. This category of tasks involves responding to policy decisions determining the agency's specific objectives for the near and distant future, planning the means for accomplishing these objectives, and developing the required methods and instruments. The areas of planning and development include:
- a. Budget and funding.
 - b. Grant applications.
 - c. Implementation plans.
 - d. Regulations
 - e. Methods for use in the technical services, engineering, and enforcement efforts of the agency.

f. Public information programs and products.

g. Personnel resources.

Some representative tasks in this category include:

- a. Coordinate preparation of the agency's annual budget, evaluate it with regard to agency objectives, and defend it before governmental funding agency.
- b. Direct efforts to revise the annual budget to meet requirements of funding agency.
- c. Coordinate and to a limited extent participate in the personnel recruitment program.
- d. Develop and implement plan for coordinating manpower, facilities, equipment, and materials to achieve maximum utilization.
- e. Coordinate and direct the development of management tools and techniques (e.g., application of Program Plan Budgeting System) for use by the agency.
- f. Direct development of agency's position with regard to new regulations or revisions to existing regulations. This includes directing efforts in:

- 1) Identification of problem areas amenable to solution through new or revised regulations.
- 2) Evaluation of background data pertinent to language, standards, and methods included in proposed regulations.
- 3) Develop strategy to get passage by rule-making body.

g. Coordinate development of new techniques and materials required to implement proposed or newly promulgated regulations.

4. Coordinate and direct agency activities, including coordination of agency activities with those of Federal, state local, and private programs. In addition to the responsibilities of monitoring the agency's working context, defining policy, and coordinating development, agency high

level management must maintain control of agency behavior. The tasks included in this category involve routine and general management of agency personnel via the hierarchy of supervision. Also, this category includes tasks requiring high level management to take more direct control of the agency's resources to accomplish a specific objective. The duration of such direct control varies as a function of the nature of the objective to be achieved. Typically, the latter type tasks are performed in close contact with the appropriate division supervisor. Examples of tasks in this category include:

- a. Routine review and evaluation of agency activities (effectiveness and productivity) as portrayed in monthly progress reports prepared by supervisors of the operational division.
 - b. Routine review and evaluation of published materials depicting the state-of-the-art in technical and management areas (e.g., air pollution control technology, personnel management techniques, program planning and budgeting methods, latest legal interpretations and precedents).
 - c. Direction of personnel recruitment and selection effort aimed at acquiring high level technical and management personnel.
 - d. Coordinate and direct an effort involving agency engineering and enforcement personnel to design a compliance program for a large pollution source.
 - e. Coordinate and direct an effort by selected engineering personnel to survey research literature for evidence to support the agency's position regarding proposed legislation.
5. Represent the agency. Many of the tasks of high level management involve "speaking" for the agency in a variety of media and to a broad spectrum of audiences, each having their own interests and expectations. The media include print, radio, television, public meetings, closed meetings, and private conversations with

individuals. The possible audiences addressed include the public at large, interest groups, governmental bodies, quasi-governmental bodies (e.g., variance and advisory boards), and industrial representatives. In all of these encounters, high level management attempts to communicate the position and view of the agency in a manner consistent with the objectives of the exchange and the interests and background of the audience. The tasks in this category include:

- a. Negotiate with representatives of a pollution source to work out a suitable compliance program (including equipment to be installed and an acceptable timetable).
- b. Direct the development of a public information program aimed at increasing the public's knowledge concerning a given subject area.
- c. Present the agency's position regarding proposed legislation in public hearings before the state legislature.
- d. Act as chairman of an open meeting addressing air pollution control problems and solutions.
- e. Conduct a press conference with representatives of the news media.
- f. Meet face-to-face with public sector pressure groups to discuss differences between agency policy and the groups' recommended approaches.

Skill Requirements

1. Ability to make public presentations.
2. Ability to effectively chair public or private meetings intended to generate questions, comments, criticisms, or recommended modification to proposed regulations or activities.
3. Ability to prepare and rehearse a presentation to be made before a court, hearing board, or other legal or quasi-legal body.

4. Ability to communicate effectively with agency personnel in working on operational problems involving enforcement, engineering, or technical activities of the agency.
5. Ability to communicate effectively in written or spoken form with representatives of industry, citizen groups, or politicians to accomplish functions including:
 - a. Solicit criticisms, expectations, demands, and supporting technical information relevant to development of new regulations or agency policy.
 - b. "Sell" the agency's position on the proposed regulation.
 - c. Negotiate a compromise version of the regulation which meets the requirements of the agency and satisfies the pressure groups.
 - d. Develop an episode control system.
 - e. Aid in development of local control programs.
6. Ability to communicate effectively with responsible local air pollution control officials in written and spoken form. These communications may deal with areas including:
 - a. The need for local programs and their conformity with the state's models.
 - b. Reduction of political influence in development of local programs.
7. Ability to answer (in public) general and technical questions concerning air pollution control technology and regulatory or control functions. The level of detail required for the response will vary as a function of the audiences addressed. Such audiences can include:
 - a. Legislative bodies or hearing boards
 - b. Citizen groups
 - c. Representatives of industry
 - d. News media

8. Ability to judge or learn from the comments and questions of group members the range and consensus of their opinions relevant to agency activities.
9. Ability to judge current local political or economic conditions and react to them accordingly in developing agency activities or policy.
10. Ability to identify and describe existing conditions which signal the need for revision to existing regulations or agency activities. Such conditions may include:
 - a. A new Federal ambient air quality standard is promulgated for a specific contaminant.
 - b. Current emission standards are not achieving the desired effect on air quality.
 - c. A breakthrough in air pollution control technology has occurred which makes a new generation of emission standards achievable.
 - d. There has been an excessive number of single-chamber incinerator smoke violations.
 - e. Scientific evidence has been published showing significant health effects due to a contaminant which is currently emitted without being controlled by regulations.
 - f. The penalty for a specific violation does not appear to be having a significant deterrent effect.
11. Ability to explain the interrelationships of local regulations, environmental conditions, and agency activities.
12. Ability to systematically and effectively solve problems or make decisions. This general skill includes:
 - a. Ability to accurately define the problem in terms of objective, desirable outcome.
 - b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.

- c. Ability to identify and describe potential solutions or approaches for developing solutions.
- d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
- e. Ability to set realistic priorities.
- f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

- 13. Ability to integrate knowledge of agency capability, past experience, local regulations, and knowledge of the state-of-the-art in air pollution control and regulatory technology to define and then seek to achieve agency objectives.
- 14. Ability to coordinate an on-going evaluation of local agency internal training, procedure development, and external activities (e.g., performance of control and regulatory efforts).
- 15. Ability to work with attorneys to interpret the relevant enabling legislation and local air pollution control regulations to define the agency's authority, responsibility, and jurisdiction.
- 16. Ability to interact with attorneys in developing acceptable language and content for proposed regulations, modifications to current regulations, and in developing model ordinances. This requires skill in communicating the needs of the agency to the attorney and in helping him to evaluate the degree to which the legally acceptable form satisfies the original intent of the effort.

17. Ability to interpret existing state or federal legislation and regulations relevant to the state's possible role in developing local air pollution control programs.
18. Ability to direct or perform the tasks required to gather technical information required to develop a draft regulation. The tasks to be performed may include:
 - a. Literature reviews
 - b. Empirical research
 - c. Survey of the opinions of experts
 - d. Review of the experiences of agencies who have dealt with similar problems.
19. Ability to direct or coordinate non-routine projects which require the type of skills and knowledge available within the staff of a specific operational group (e.g., inspection, plan review groups). To direct such projects the Director frequently must:
 - a. Develop project objectives from brief statements of the general purpose of the projects.
 - b. Make assignments.
 - c. Prepare schedules.
 - d. Supervise production.
 - e. Present or coordinate presentation of results.
20. In establishing working policy and objectives for an agency or agency element, the ability to accurately identify:
 - a. What its constituency (i.e., the public and industry) expects and is willing to accept.
 - b. If the technological state-of-the-art has developed sufficiently to support proposed agency efforts.
21. Ability to direct or coordinate development and implementation of policies and procedures governing:
 - a. Purchasing and inventory management.

- b. Personnel management.
 - c. Financial management (e.g., budget planning and implementation).
22. Ability to select enforcement actions which are appropriate for specific types of violations and circumstances. This skill may require the ability to interact with attorneys and enforcement personnel in selecting the appropriate enforcement action.
23. Ability to communicate effectively with technical personnel of the agency concerning issues regarding selection, purchasing, or financial planning activities.
24. Ability to evaluate criticisms and suggestions responsive to a draft of a new regulation and to use these comments to further develop the draft.
25. Ability to develop or assist in the development of a personnel performance evaluation system, and the ability to administer such a system effectively. Development of the system includes:
- a. Ability to identify appropriate performance dimensions. Such dimensions should be observable and, as much as possible, open to objective evaluation.
 - b. Ability to develop a review procedure and working materials.
 - c. Ability to provide constructive feedback to staff members in a manner which will foster continuing personnel development.
26. Ability to develop or assist in development of job specifications and selection criteria which can be used in a personnel recruitment program.
27. Ability to forecast the resources needed by a working group in order to prepare the annual budget. This skill encompasses component abilities including:
- a. Anticipate the specific types of services to be performed during the next period.

- b. Project the work load over the period. To do this, the planner must identify the critical variables (e.g., population growth, economic conditions) and transform them into a factor to use to derive anticipated work load. Be careful not to base projections too heavily on current work loads. Consider the effect of new regulations and procedures on work load.
 - c. Determine if current resources will be capable of handling the anticipated work load. Identify the modifications required in current resource levels to cover anticipated work load.
- 28. Ability to coordinate a systematic effort to determine the requirements for a local program. This ability includes skills required to:
 - a. Design an adequate study of the pollution problems of the area.
 - b. Supervise collection, analysis, and presentation of the data from the requirements study.
 - c. Evaluate the findings and make realistic conclusions about the type of program that is required.
- 29. Ability to interpret agency policy in developing and planning agency activities. This skill involves the ability to discriminate whether or not planned activities are consistent with agency policy.
- 30. Ability to evaluate the quantity and quality of work produced by the staff and discriminate acceptable from unacceptable performance. This skill assumes the ability to develop or use criteria of performance acceptability.
- 31. Ability to coordinate development of a public information policy and program for the agency.
- 32. Ability to respond in private or publicly to questions and criticisms regarding agency activities and policies. The objective of such responses would typically be to support the agency position.

33. Ability to present testimony effectively in court. Effective testimony can be characterized as:

- a. Confidently presented
- b. Truthful
- c. Brief
- d. Responsive to the questions asked
- e. Responsive only to questions asked
- f. Unbiased
- g. Clearly and audibly spoken
- h. Courteously presented

This ability includes responding effectively under cross-examination.

34. In interaction with industry or citizen groups, the ability to take a position based upon accurate assessment of the agency's capacity to perform its functions effectively. Also, the ability to identify "pressure" points which could be used to improve the agency's bargaining position. In the case of industry, such points include:

- a. Sensitivity to antitrust considerations.
- b. Concern for the effects of public relations (i.e., "poor press").
- c. Knowledge that if an agreement is not reached with the agency, a more technically naive body (e.g., a state legislature) might formulate unreasonably stringent rules.

35. Ability to counsel agency personnel with grievances and to work with union officials in cases in which they are involved.

Knowledge Requirements

- 1. Knowledge of the technical areas of air pollution control and industrial processes at a level of detail required for

management activities, including:

- a. Development of new regulations.
 - b. Response to questions and criticism regarding agency activity from newsmen, the public, governmental bodies.
 - c. Development of specific compliance programs.
 - d. High level supervision of the agency's activities in technical, engineering, and enforcement areas.
 - e. Agency policy and program development.
2. Knowledge of the types of situations which can occur and which signal the need for developing new regulations or amending current regulations. Such conditions include:
- a. A new federal ambient air quality standard is promulgated for a specific contaminant.
 - b. Current emission standards are not achieving the desired effect on air quality.
 - c. A breakthrough in air pollution control technology has occurred which makes a new generation of emission standards achievable.
 - d. There has been an excessive number of single-chamber incinerator smoke violations.
 - e. Scientific evidence has been published showing significant health effects due to a contaminant which is currently emitted without being controlled by regulations.
 - f. The penalty for a specific violation does not appear to be having a significant deterrent effect.
3. Detailed and broad knowledge of the local air pollution control regulations to support the duties of high level management of the agency. Such duties include:
- a. Development of agency policy

- b. Coordination of non-routine studies
 - c. Development of new regulations
4. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
 5. Knowledge of the recommended principles for developing, maintaining, and effectively using an interaction with interest groups in development of new regulations or in the performance of routine agency activities.
 6. Knowledge of the methods available for gathering the background information needed to develop new or modified regulations. Also, knowledge of the method for selecting the appropriate information gathering method.
 7. Knowledge of the published or unpublished sources of information available in a variety of areas relevant to air pollution control and air quality standards. Resources typically used in this task include:
 - a. The output of abstracting services (e.g., References 2, 3, 6, 7, 8, 9, 17, 18, and 19).
 - b. Relevant literature reviews (References 1, 4, 12, 13, 14, 15, and 16).
 - c. Journal annual indices (Reference 10).
 - d. Proceedings of technical meetings (Reference 21).
 - e. Agency files and publications.
 8. Knowledge of procedures for maintaining contact with the elements of the agency's working context which affect or are affected by its performance. These elements include:
 - a. The public sector
 - b. The industrial/commercial community
 - c. Local governmental and quasi-governmental bodies which interface with agency activities (e.g., advisory board, variance board, public health department)

d. Relevant state or federal agencies

The purpose of maintaining contact with the above is to monitor the agency's progress, limitations, and areas of possible extension of its activities.

9. Knowledge of the air pollution control policies and programs of similar agencies and the effects those policies and programs have had on local pollution conditions, industrial cooperation, citizen support, etc.
10. Knowledge of the relative strengths and weaknesses of alternative control and regulatory activities, programs, and policies that an agency can take under given operating conditions.
11. Knowledge of the alternate enforcement actions which the agency can take for a given type of violation; criteria, priorities, standards, and precedents used to select the appropriate enforcement activity.
12. Knowledge of Federal and state statutes relating to all areas of environmental health engineering, public health, and air pollution control.
13. Knowledge of the services federal agencies offer state and local agencies (e.g., evaluation by Control Agency Development, and Air Pollution Technical Information Center, EPA). This includes knowledge of the positions and personnel in the federal agency who can provide information useful for problem solving.
14. Knowledge of the functional capabilities and current activities of all agency operating elements at a level of detail sufficient to support development of agency policy or to generally supervise agency activities.
15. Background knowledge sufficient to support evaluation and implementation of new techniques in areas including:
 - a. Personnel management.
 - b. Organizational structure.
 - c. Program and budgetary planning.
 - d. Computerized data filing and acquisition systems.

16. Knowledge of the procedures and materials used to apply for air pollution control program support from the federal government. Reference 20 describes the aid available under the Air Quality Act of 1967. Reference 5 provides instructions for grant application. Also, knowledge of the standard operating reports or periodic statements required by funding agencies.
17. Knowledge of accepted procedures and techniques for planning the use of resources (personnel, material, and financial) to accomplish a specific work goal. This includes the ability to modify plans in response to contingencies (e.g., delays caused by difficulty in obtaining required information such that the production schedule is affected).
18. Knowledge of principles and procedures used for identifying personnel requirements and selection criteria and for using them in a selection program. Reference 11 contains relevant information.
19. Knowledge of accepted procedures and techniques for developing job specifications and job classification schemes.
20. Knowledge of principles and procedures for designing, developing, and implementing a personnel performance evaluation system.
21. Knowledge of accepted procedures and techniques in personnel relations and personnel problem solving.
22. Knowledge of principles and procedures for identifying training requirements, preparing training objectives, and developing a program to achieve the objectives.
23. Knowledge of local procedures for presenting and defending proposed legislation or regulations prior to formal adoption proceedings.
24. Knowledge of principles and procedures for organizing an operational or task-oriented group.
25. Knowledge of ethical and effective methods for lobbying or negotiating with legislators to speed up adoption of a desired regulation.

26. Knowledge of the procedures for structuring a literature search and review effort to accomplish given objectives. This includes:
- a. Use of key word systems
 - b. Information filing systems
 - c. Development of review objectives
27. Sufficient knowledge of the law to work with attorneys in drafting or evaluating model regulations and ordinances. The regulations and ordinances should support an adequate control program, should be enforceable, and should be free of loopholes.
28. Knowledge of the procedure for preparing a presentation to be given before a court, hearing board, or other legal or quasi-legal body.
29. Knowledge of the appropriate dress and decorum for presentation before a court, hearing board, or other legal or quasi-legal body.
30. Knowledge of the accepted techniques for planning and presenting written or spoken communications, such as technical reports, public presentations, and formal correspondence.
31. Knowledge of the procedure for developing draft regulations which are responsive to identified needs.

References

1. California Air Resources Board. Ambient air quality standards. January 1970.
2. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: Municipal incineration-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-92.
3. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: Nitric acid manufacturing-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-93.

4. Environmental Protection Agency, Air Pollution Control Office. Air quality criteria for nitrogen oxides. Washington, D. C.: Author, January 1971. No. AP-84.
5. Environmental Protection Agency, Air Pollution Control Office. Application for air pollution control program grant. Instructions. February 1971.
6. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: An annotated bibliography. Part I. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
7. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: An annotated bibliography. Part II. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
8. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: Cement manufacturing-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-95.
9. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: Electric power production-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-96.
10. Journal of the Air Pollution Control Association. Vol. 20, No. 1, January 1970, p. i-vi. Author and title index for Volume 19 (January through December 1969).
11. McMorry, R. Tested techniques of personnel selection. Chicago: Darrnell Corporation.
12. National Air Pollution Control Administration. Air quality criteria for carbon monoxide. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-62.
13. National Air Pollution Control Administration. Air quality criteria for hydrocarbons. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, March 1970. No. AP-64.

14. National Air Pollution Control Administration. Air quality criteria for particulate matter. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-49.
15. National Air Pollution Control Administration. Air quality criteria for photochemical oxidants. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-63.
16. National Air Pollution Control Administration. Air quality criteria for sulfur oxides. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-50.
17. National Air Pollution Control Administration. Hydrocarbons and air pollution: An annotated bibliography. Part I. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, October 1970. No. AP-75.
18. National Air Pollution Control Administration. Hydrocarbons and air pollution: An annotated bibliography. Part II. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare, Public Health Service, Environmental Health Service, October 1970. No. AP-75.
19. National Air Pollution Control Administration. NAPCA abstract bulletin, Vol. 1, No. 9, Supplement 4. Research Triangle Park, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service.
20. U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, National Air Pollution Control Administration. Air pollution control program support under the air quality act of 1967. Public Law 90-148. December 1968.

21. U. S. Department of Health, Education, and Welfare; Public Health Service, National Center for Air Pollution Control.
Proceedings: The third national conference on air pollution, Washington, D. C., December 12-14, 1966. PHSP #1649.

Agency Resources Management

Operation Overview

The resources of an air pollution control agency fall into three separable but interrelated categories: personnel, materials and equipment, and funds. Although these resources are managed at various levels by many agency personnel, there is invariably the need for centralized coordination and supervision of these activities. Such centralized control is usually the responsibility of an administrative assistant to the director and his staff. Regardless of what position accomplishes the objective, tasks related to resources management are common to all agencies.¹

The activities involved in resources management involve a minimum of skills and knowledge specific to the area of air pollution control. The following descriptive material provides a breakdown of the tasks in this area and a list of general skill and knowledge requirements.

Occupational Category: Resources Administrator or
Program Planning and Development Specialist (Senior)

Operation Description

The tasks involved in resources management generally depend upon the type of resource to be managed. Therefore, the tasks roughly group into the following (described in more detail below):

- Management of personnel resources.
- Management of materials and equipment resources.
- Management of financial resources.

¹One possible exception would be in the case of a special administrative unit of local government which handled such matters for several agencies without being a part of any of them. Even in such a case, someone in the agency would have to interact with the administrative unit.

The task categories are not mutually exclusive nor independent of one another. Each category contains specific tasks which an agency administrator is likely to be responsible for in all types of agencies.

1. Management of personnel resources. The tasks involved in managing the personnel resources of the agency include:
 - a. Assist in the development and continuing refinement of the agency's personnel policy and procedures.
 - b. Work with technical and clerical supervisors to identify current and anticipated manpower requirements.
 - c. Determine whether current job specifications (including job description, required skills and knowledge, required experience, etc.) are appropriate to existing and anticipated positions.
 - d. Direct preparation of all new or revised job specification.
 - e. Maintain all employee records.
 - f. Assist in the solution of personnel relations problems (e.g., act as an arbitrator or counselor in problems involving individuals and their supervisors, work with shop steward in unionized agencies).
 - g. Supervise administration of employee benefits program (e.g., vacation leave, retirement plans, life insurance plans, sick leave, etc.).
 - h. Assist director in contract negotiations with unions or other employee organizations.
 - i. Supervise administration of the personnel performance review/evaluation system.

- j. Assist in design of agency organization and paperwork processing system.
 - k. Coordinate personnel selection activities and supervise application of the appropriate procedures.
2. Management of materials and equipment resources. The tasks in this area of resources management include:
- a. Assist in the development and continuing refinement of the agency's purchasing policy
 - b. Direct the development of purchasing procedures, materials, and paper flow.
 - c. Supervise the procurement of equipment and supplies. Evaluate the justification for all major purchases.
 - d. Supervise the operation of an equipment accountability system.
 - e. Supervise the equipment inventory system and related records.
3. Management of agency financial resources. The tasks involved in financial management include:
- a. Coordinate development of the agency's annual budget. This requires close interaction with supervisors of the agency's various operational divisions.
 - b. Manage actual expenditures to maintain the budget. This effort may result in a working budget which reflects the estimated expenditures of the various divisions and groups within the agency.
 - c. Coordinate preparation of grant application forms.
 - d. Maintain records and prepare reports describing expenditure of grant funds.
 - e. Supervise administration of accounting procedures.

Skill Requirements

1. Ability to communicate effectively with technical personnel of the agency concerning issues regarding selection, purchasing, or financial planning activities.
2. Ability to counsel agency personnel with grievances and to work with union officials in cases in which they are involved.
3. Ability to develop or administer a personnel evaluation system.
4. Ability to develop or assist in the development of a personnel performance evaluation system, and the ability to administer such a system effectively. Development of the system includes:
 - a. Ability to identify appropriate performance dimensions. Such dimensions should be observable and, as much as possible, open to objective evaluation.
 - b. Ability to develop a review procedure and working materials.
 - c. Ability to provide constructive feedback to staff members in a manner which will foster continuing personnel development.
5. Ability to develop or assist in development of job specifications and selection criteria which can be used in a personnel recruitment program.
6. Ability to use agency files, source process data, and other methods to develop the appropriate background data to initiate an inspection of a stationary source.
7. Ability to identify and describe training requirements for information and skill in order to determine content areas to be covered in a program. This requires:
 - a. Identification and description of the tasks to be performed by the trainee on the job which are to be covered by the course.

- b. Identification of the skills and knowledge required to effectively perform those tasks.
- c. Identification of those required skills and knowledge not currently held by the trainees and, therefore, reasonable content areas for the course to attack.

The extent to which this skill is required depends upon the degree of freedom available to the school operator in designing the course.

- 8. Ability to systematically and effectively solve problem or make decisions. This general skill includes:

- a. Ability to accurately define the problem in terms of objective, desirable outcome.
- b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
- c. Ability to identify and describe potential solutions or approaches for developing solutions.
- d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
- e. Ability to set realistic priorities.
- f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

9. Ability to design "paper flow" systems to handle and store necessary documentation. The system should be responsive to the quantity of materials to be handled and the agency's ability to utilize state-of-the-art techniques and equipment (e.g., microform, computers).
10. Ability to interpret agency policy in developing and planning agency activities. This skill involves the ability to discriminate whether or not planned activities are consistent with agency policy.
11. Ability to direct or coordinate development and implementation of policies and procedures governing:
 - a. Purchasing and inventory management.
 - b. Personnel management.
 - c. Financial management (e.g., budget planning and implementation).
12. Ability to predict unplanned-for events or events which exceed budgetary expectations (for personnel, financial, or equipment resources) and then to modify plans appropriately to respond to such contingencies.
13. Ability to assist in development of agency functional organization.
14. Ability to assist and coordinate agency technical staff in forecasting resource needs in order to prepare the annual budget. This skill includes:
 - a. Anticipating the specific types of services to be performed during the next period.
 - b. Projecting the work load over the period using critical, related variables such as population growth, economic conditions.

- c. Determining if current resources will be capable of handling the anticipated work load and identifying modifications required to current resource levels to cover the anticipated work load.
- 15. Ability to develop and coordinate implementation of equipment accountability and inventory control systems.
- 16. Ability to coordinate systems to monitor and control agency expenditures within the budgetary constraints.
- 17. Ability to prepare or coordinate preparation of grant application materials.

Knowledge Requirements

- 1. Knowledge of principles and procedures for identifying training requirements, preparing training objectives, and developing a program to achieve the objectives.
- 2. Knowledge of the methods used in designing jobs and determining the types of individuals to fill the jobs.
- 3. Knowledge of principles and procedures used for identifying personnel requirements and selection criteria and for using them in a selection program. Reference 2 contains relevant information.
- 4. Knowledge of accepted procedures and techniques for developing job specifications and job classification schemes.
- 5. Knowledge of principles and procedures for designing, developing, and implementing a personnel performance evaluation system.
- 6. Knowledge of principles and procedures for organizing an operational or task oriented group.
- 7. Knowledge of accepted procedures and techniques in personnel relations and personnel problem solving.

8. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
9. Background knowledge sufficient to support evaluation and implementation of new techniques in areas including:
 - a. Personnel management.
 - b. Organizational structure.
 - c. Program and budgetary planning.
 - d. Computerized data filing and acquisition systems.
10. Knowledge of the services federal agencies offer state and local agencies (e.g., evaluation by Control Agency Development, and Air Pollution Technical Information Center, EPA). This includes knowledge of the positions and personnel in the federal agency who can provide information useful for problem solving.
11. Knowledge of accepted procedures and techniques for planning the use of resources (personnel, material, and financial) to accomplish a specific work goal. This includes the ability to modify plans in response to contingencies (e.g., delays caused by difficulty in obtaining required information such that the production schedule is affected).
12. Knowledge of the procedures and materials used to apply for air pollution control program support from the federal government. Reference 3 describes the aid available under the Air Quality Act of 1967. Reference 1 provides instructions for grant application. Also, knowledge of the standard operating reports or periodic statements required by funding agencies.
13. Knowledge of the general area of air pollution technology and control agency activities at a level of detail sufficient to support interaction with agency personnel in:
 - a. Budget development and program planning.

- b. Purchasing (e.g., for value analysis of alternative items).
 - c. Development of job specifications.
- 14. Knowledge of the state-of-the-art methods in program planning and budgeting (for example, Program Evaluation and Review Technique, Plan Programming Budgeting System).
 - 15. Knowledge of basic accounting methods such as preparation of trial balance and financial statements (using general journal and general ledger methods).
 - 16. Knowledge of accepted procedures and techniques for developing job specifications and job classification schemes.
 - 17. Knowledge of accepted procedures and techniques in personnel relations and personnel problem solving.
 - 18. Knowledge of "systems design" methods to be used in development of "paper flow" systems.
 - 19. Knowledge of procedures for developing and administering employee benefit programs including vacation leave, insurance plans, sick leave, etc.
 - 20. Knowledge of equipment accountability and inventory control procedures.

References

- 1. Environmental Protection Agency, Air Pollution Control Office. Application for air pollution control program grant. Instructions. February 1971.
- 2. McMurry, R. Tested techniques of personnel selection. Chicago: Dartnell Corporation.
- 3. U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, National Air Pollution Control Administration. Air pollution control program support under the air quality act of 1967. Public Law 90-148. December 1968.

Special Staffing Guidance

In a large agency which can justify the cost, a full time Resources Administrator would probably be hired to handle the tasks described above. However, in a smaller agency a senior Program Planning and Development Specialist could be assigned to one or more of the above tasks on a continuing or temporary basis.

If a Program Planning and Development Specialist is assigned to perform the tasks involved in resources management the individual ought to have a broad background in business administration or management with experience or training in accounting and personnel administration. A Bachelor's Degree in Business is suggested although an appropriate Liberal Arts background may be acceptable. The assignee's background ought to also include experience in an industrial setting and the capability to communicate with technical personnel (e.g., Engineers, Chemists, Meteorologists).

Technical Management

Operation Overview

Technical Management is defined here as all of the tasks concerned with general supervision, planning, and development of the technical (or operational) capabilities of the agency. These tasks are generally performed by middle management personnel or directors of the agency's larger working groups or its operational divisions (e.g., the Engineering or Enforcement Division). The tasks of first level supervisors are treated elsewhere. As in the other management areas, it is hypothesized that generally the tasks in Technical Management are common to all agencies regardless of agency size. However, the complexity of the tasks (in terms of the scope of problems covered) may increase as a function of the extent of agency jurisdiction and comprehensiveness. The following description of the tasks involved in technical management provides a useful basis for identifying general skill and knowledge requirements.

Occupational Category

The occupational category of an individual in the role of a Technical Manager should have a background generally commensurate with the work and personnel to be managed. Therefore the occupational categories which could be assigned to this area include:

- Engineer (Senior)
- Chemist (Senior)
- Meteorologist (Senior)
- Field Enforcement Officer (Senior)

Operation Description

Generally, the operation of Technical Management of agency activities consists of categories of tasks (described in detail below) including:

- Plan and direct use of resources.
- Coordinate development of procedures and personnel capabilities.

- Manage operations.
- Provide technical assistance.
- Provide technical consultation.

Each of the above categories contain tasks which are typically performed by the directors of the operational or line divisions within the agency.

1. Plan and direct use of the operational group's resources.

These tasks are directed toward detailed planning of resource requirements and allocation in order to aid high level management or staff plan overall agency development and operation.

The tasks in the category include:

- a. Plan the anticipated activities of the group and identify its budgetary requirements.
- b. Prepare the sections of grant applications and implementation plans which relate to the activities of the operational group or division.
- c. Organize the group into smaller operational units as work load and resources permit. For example, establish or coordinate establishment of separate groups within a plan review section, each of which handles permit applications from a specific industrial category.
- d. Periodically review work load and relative progress and make adjustments in the allocation of personnel resources. For example, alter work assignments to correct for delays resulting from contingencies.

2. Develop operational procedures and personnel capabilities. The tasks in this category are concerned with developing the methods and personnel capabilities required to perform the activities of the operational group. These tasks include:

- a. Develop or direct development of all formal procedures and materials used by the operational group (e.g., steps in processing a permit application, steps in handling a complaint, data collection forms, form letters).

- b. Recruit and select new employees. This task includes identification of personnel requirements and selection criteria, preparation of advertisements, evaluation of candidates, and the selection decision.
 - c. Develop and administer training. This task includes identification of training requirements and objectives, preparation of required materials, program administration, and evaluation.
 - d. Develop and administer the personnel performance evaluation system. This task involves identification of relevant performance dimensions, design of the review procedure, implementation, and evaluation of the system.
3. Manage operations. The tasks in this category are directly concerned with maintenance of acceptable quality and productivity by the operational group. These tasks could also be characterized as "technical supervision." Such supervisory tasks are performed at several levels of agency activity and include:
- a. Review all or a sample of the products or processes of the operational group for quality and timeliness. This task includes:
 - 1) Development of performance or product acceptance criteria.
 - 2) Critical feedback to individuals indicating the strengths and weaknesses of their performance.
 - 3) Modification of procedures as a result of a check of their usefulness.
 - 4) Disciplinary action as required.
 - b. Make work assignments. Depending on the assignment policy of the agency, tasks to be done, and the possibility of alternate assignees, this activity can include:
 - 1) Identifying the types of skills and knowledge required to perform the assignment.

- 2) Knowledge of the capabilities of the group staff.
 - 3) Determining which staff members are available for the assignment.
 - 4) Identifying the most capable individual of those who are available for the assignment. If the assignment policy is aimed at producing general capability rather than specialists, identify who needs the assignment as a learning experience.
- c. Set schedules, priorities, and other guidelines which define productivity and quality requirements.
 - d. Produce periodic reports of group productivity and accomplishments.
 - e. Determine the need for recordkeeping and assure that the appropriate information is collected and filed.
 - f. Direct completion of special or non-routine projects. This may require an initial detailing or extrapolation of specific objectives from the relatively brief and general request from higher level management which precipitated the work.
4. Provide technical assistance to the staff. Frequently, a Technical Manager or supervisor must help solve an operational problem with which his staff is having difficulty. The lower the level of the supervisor in the agency management hierarchy the more likely it is he will have to work on the more difficult routine operational problems.
 5. Provide technical consultation. The Technical Manager or supervisor can be called upon to provide technical information about his specialty or his staff's activities to audiences within and outside of the agency. It should be noted that anyone in the agency who performs his job well may be asked to provide technical information or opinion. However, supervisors are more likely to perform such tasks than individual staff members.

- a. Assist high level management in convincing pollution sources of the need and feasibility of proposed regulations.
- b. Provide information necessary to respond to a complaint or answer a question from the public.
- c. Provide pollution sources with alternative means of correcting or controlling their emissions.
- d. Provide testimony as an expert witness in court or at a quasi-legal hearing.
- e. Consult with representatives of other governmental agencies (state, national, or international) to assist them or to secure needed information or support.
- f. Work with non-governmental organizations to solve problems which relate to air pollution control (e.g., provide design information to an organization of architects and engineers).

Skill Requirements

- 1. Ability to identify and describe training requirements for information and skill in order to determine content areas to be covered in a program. This requires:
 - a. Identification and description of the tasks to be performed by the trainee on the job which are to be covered by the course.
 - b. Identification of the skills and knowledge required to effectively perform those tasks.
 - c. Identification of those required skills and knowledge not currently held by the trainees and, therefore, reasonable content areas for the course to attack.

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 - b. Identification of the skills and knowledge required to effectively perform those tasks.
 - c. Identification of those required skills and knowledge not currently held by the trainees and, therefore, reasonable content areas for the course to attack.

The extent to which this skill is required depends upon the degree of freedom available to the school operator in designing the course.

2. Ability to present testimony effectively in court. Effective testimony can be characterized as:
 - a. Confidently presented
 - b. Truthful
 - c. Brief
 - d. Responsive to the questions asked
 - e. Responsive only to questions asked
 - f. Unbiased
 - g. Clearly and audibly spoken
 - h. Courteously presented.

This ability includes responding effectively under cross-examination.

3. Ability to communicate effectively in written or spoken form with representatives of industry, citizen groups, or politicians to accomplish functions including:
 - a. Solicit criticisms, expectations, demands, and supporting technical information relevant to development of new regulations or agency policy.
 - b. "Sell" the agency's position on the proposed regulation.
 - c. Negotiate a compromise version of the regulation which meets the requirements of the agency and satisfies the pressure groups.
 - d. Develop an episode control system.
 - e. Aid in development of local control program.

4. Ability to effectively chair public or private meetings intended to generate questions, comments, criticisms, or recommended modification to proposed regulations or activities.
5. Ability to systematically and effectively solve problems or make decisions. This general skill includes:

- a. Ability to accurately define the problem in terms of objective, desirable outcome.
- b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
- c. Ability to identify and describe potential solutions or approaches for developing solutions.
- d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
- e. Ability to set realistic priorities.
- f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

6. In interactions with industry or citizen groups, the ability to take a position based upon accurate assessment of the agency's capacity to perform its functions effectively. Also, the ability to identify "pressure" points which could be used to improve the agency's bargaining position. In the case of industry, such points include:

- a. Sensitivity to antitrust considerations.

- b. Concern for the effects of public relations (i.e., "poor press").
 - c. Knowledge that if an agreement is not reached with the agency, a more technically naive body (e.g., a state legislature) might formulate unreasonably stringent rules.
- 7. Ability to communicate effectively with agency personnel in working on operational problems involving enforcement, engineering, or technical activities of the agency.
- 8. Ability to forecast the resources needed by a working group in order to prepare the annual budget. This skill encompasses component abilities including:
 - a. Anticipate the specific types of services to be performed during the next period.
 - b. Project the work load over the period. To do this, the planner must identify the critical variables (e.g., population growth, economic conditions) and transform them into a factor to use to derive anticipated work load. Be careful not to base projections too heavily on current work loads. Consider the effect of new regulations and procedures on work load.
 - c. Determine if current resources will be capable of handling the anticipated work load. Identify the modifications required in current resource levels to cover anticipated work load.
- 9. Ability to develop or assist in the development of a personnel performance evaluation system, and the ability to administer such a system effectively. Development of the system includes:
 - a. Ability to identify appropriate performance dimensions. Such dimensions should be observable and, as much as possible, open to objective evaluation.

- b. Ability to develop a review procedure and working materials.
 - c. Ability to provide constructive feedback to staff members in a manner which will foster continuing personnel development.
- 10. Ability to evaluate the quantity and quality of work produced by the staff and discriminate acceptable from unacceptable performance. This skill assumes the ability to develop or use criteria of performance acceptability.
- 11. Ability to establish and maintain schedules of productivity such that work deadlines are met consistently.
- 12. Ability to direct or coordinate non-routine projects which require the type of skills and knowledge available within the staff of a specific operational group (e.g., inspection, plan review groups). To direct such projects the director frequently must:
 - a. Develop project objectives from brief statements of the general purpose of the projects.
 - b. Make assignments.
 - c. Prepare schedules.
 - d. Supervise production.
 - e. Present or coordinate presentation of results.
- 13. Ability to communicate effectively with technical personnel of the agency concerning issues regarding selection, purchasing, or financial planning activities.
- 14. Ability to predict unplanned-for events or events which exceed budgetary expectations (for personnel, financial, or equipment resources) and then to modify plans appropriately to respond to such contingencies.

- b. Ability to develop a review procedure and working materials.
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15. Ability to develop or assist in development of job specifications, and selection criteria which can be used in a personnel recruitment program.
16. Ability to counsel agency personnel with grievances and to work with union officials in cases in which they are involved.
17. Ability to develop or administer a personnel evaluation system.
18. Ability to use agency files, source process data, and other methods to develop the appropriate background data to support review of a stationary source.
19. Ability to make public presentations.
20. Ability to respond in private or publicly to questions and criticisms regarding agency activities and policies. The objective of such responses would typically be to support the agency position.
21. Ability to answer (in public) general and technical questions concerning air pollution control technology and regulatory or control functions. The level of detail required for the response will vary as a function of the audiences addressed. Such audiences can include:
 - a. Legislative bodies or hearing boards.
 - b. Citizen groups.
 - c. Representatives of industry.
 - d. News media.
22. Ability to explain the interrelationships of local regulations, environmental conditions, and agency activities.
23. Ability to interpret agency policy in developing and planning agency activities. This skill involves the ability to discriminate whether or not planned activities are consistent with agency policy.

Knowledge Requirements

1. Knowledge of the published or unpublished sources of information available in a variety of areas relevant to air pollution control and air quality standards. Resources typically used in this task include:
 - a. The output of abstracting services (e.g., References 2, 3, 5, 6, 7, 8, 16, 17, and 18).
 - b. Relevant literature reviews (References 1, 4, 11, 12, 13, 14, and 15).
 - c. Journal annual indices (Reference 9).
 - d. Proceedings of technical meetings (Reference 19).
 - e. Agency files and publications.
2. Knowledge of the technical areas of air pollution control and industrial processes at a level of detail required for management activities, including:
 - a. Development of new regulations.
 - b. Response to questions and criticism regarding agency activity from newsmen, the public, governmental bodies.
 - c. Development of specific compliance programs.
 - d. High level supervision of the agency's activities in technical, engineering, and enforcement areas.
 - e. Agency policy and program development.
3. Knowledge of the services federal agencies offer state and local agencies (e.g., evaluation by Control Agency Development, and Air Pollution Technical Information Center, EPA). This includes knowledge of the positions and personnel in the federal agency who can provide information useful for problem solving.

4. Knowledge of the accepted techniques for planning and presenting written or spoken communications such as technical reports, public presentations and formal correspondence.
5. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
6. Knowledge of accepted procedures and techniques for planning the use of resources (personnel, material, and financial) to accomplish a specific work goal. This includes the ability to modify plans in response to contingencies (e.g., delays caused by difficulty in obtaining required information such that the production schedule is affected).
7. Knowledge of principles and procedures for organizing an operational or task oriented group.
8. Knowledge of principles and procedures used for identifying personnel requirements and selection criteria and for using them in a selection program. Reference 10 contains relevant information.
9. Knowledge of principles and procedures for identifying training requirements, preparing training objectives, and developing a program to achieve the objectives.
10. Knowledge of principles and procedures for designing, developing, and implementing a personnel performance evaluation system.
11. Detailed knowledge of the technical area underlying the work performed by the staff being supervised. This knowledge should be detailed enough to support activities including:
 - a. Development of working procedures.
 - b. Evaluation of performance quality and productivity.

- c. Solution of relatively routine problems which are giving the staff difficulty.
 - d. Consultation in the area covered by the supervised operations.
 - e. Maintenance of a high level of productivity and quality in the staff's output.
- 12. Knowledge of principles and procedures for making work assignments. The procedures used will vary depending upon the assignment policy of the agency.
 - 13. Knowledge of the state-of-the-art methods in program planning and budgeting (for example, Program Evaluation and Review Technique, Plan Programming Budgeting System).
 - 14. Knowledge of accepted procedures and techniques for developing job specifications and job classification schemes.
 - 15. Knowledge of accepted procedures and techniques in personnel relations and personnel problem solving.
 - 16. Knowledge of "systems design" methods to be used in development of "paper flow" systems.
 - 17. Knowledge of the alternative control and regulatory functions which may be performed by local agencies.
 - 18. Knowledge of state and federal regulations and standards which suggest or prescribe the characteristics of local control programs.
 - 19. Knowledge of the air pollution control policies and programs of similar agencies and the effects those policies and programs have had on local pollution conditions, industrial cooperation, citizen support, etc.
 - 20. Knowledge of the relative strengths and weaknesses of alternative control and regulatory activities, programs, and policies that an agency can take under given operating conditions.

References

1. California Air Resources Board. Ambient air quality standards. January 1970.
2. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: municipal incineration - a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-92.
3. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: nitric acid manufacturing - a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-93.
4. Environmental Protection Agency, Air Pollution Control Office. Air quality criteria for nitrogen oxides. Washington, D. C.: Author, January 1971. No. AP-84.
5. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: an annotated bibliography. Part I. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
6. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: an annotated bibliography. Part II. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
7. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: cement manufacturing - a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-95.
8. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: electric power production - a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-96.
9. Journal of the Air Pollution Control Association. Vol. 20, No. 1, January 1970, p. i-vi. Author and title index for volume 19 (January through December 1969).

10. McMurry, R. Tested techniques of personnel selection. Chicago: Dartnell Corporation.
11. National Air Pollution Control Administration. Air quality criteria for carbon monoxide. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-62.
12. National Air Pollution Control Administration. Air quality criteria for hydrocarbons. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, March 1970. No. AP-64.
13. National Air Pollution Control Administration. Air quality criteria for particulate matter. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-49.
14. National Air Pollution Control Administration. Air quality criteria for photochemical oxidants. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-63.
15. National Air Pollution Control Administration. Air quality criteria for sulfur oxides. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-50.
16. National Air Pollution Control Administration. Hydrocarbons and air pollution; an annotated bibliography. Part I. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service October 1970. No. AP-75.

17. National Air Pollution Control Administration. Hydrocarbons and air pollution: an annotated bibliography. Part II. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, October 1970. No. AP-75.
18. National Air Pollution Control Administration. NAPCA abstract bulletin, Vol. 1, No. 9, Supplement 4. Research Triangle Park, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service.
19. U. S. Department of Health, Education, and Welfare; Public Health Service, National Center for Air Pollution Control. Proceedings: the third national conference on air pollution. Washington, D. C., December 12-14, 1966. PHSP #1649.

Special Staffing Guidance

The individual assigned to perform Technical Management tasks should be a senior member of an occupational category commensurate with the technical area to be managed. For example, a middle manager within the Engineering Division of the agency or the head of that division should be a senior level Engineer. Such an individual should have broad based experience and a high degree of skill in the tasks typically performed in that area. Also, the assignee should have capabilities or the ability to acquire the skills and knowledge associated with the management tasks outlined above.

Also, because of some of the tasks requiring concepts, etc., Technical Management tasks are characterized by high credibility requirements and conceptual level tasks. Therefore, in addition to substantial experience and skill in the specific tasks to be managed it would be advantageous to require Technical Managers to have publicly and professionally acceptable credentials commensurate with their responsibility, for example:

- a. Technical Managers within engineering areas could be required to be registered or licensed as professionals. Technical managers in non-engineering areas could have an applicable advanced degree and where appropriate they could be a licensed professional.

- b. Enforcement Managers could be required to have a Bachelor's Degree in a relevant technical area (e.g., Engineering).
- c. Division Directors could be required to have advanced degrees (e.g., Master's in Public Administration, Public Health, Air Pollution Control, etc.).

Literature Review and Data Summary
Regarding Ambient Air Quality Standards

Task Overview

It is necessary for agency management to keep contact with the research literature relevant to air quality and the adverse effects of contaminants. This information is used to document and justify current ambient air quality standards and to support development of new standards.

The following task description (with related skills and knowledge) is representative of the type of task performed to acquire structure and summarize relevant data concerning ambient air quality.

Occupational Category: Program Planning and Development Specialist (Senior)

Task Description

1. Identify the objectives of the literature search task in a manner which will serve as a cue for identifying the categories of information to be located and how to present them. For example, identify the concentration levels for the contaminant at which human health effects occur, indicate the current ambient concentrations and conditions in the area covered by the agency, and relate these findings to current emissions and available control or regulatory techniques.
2. Initially identify the categories of information required to accomplish the objectives. Also, suggest some possible interrelationships between the categories which may be useful in evaluating current air quality standards or developing new ones.
3. Initially identify the interpretive areas or possible confusion points in the data which will have to be resolved. For example, standard definitions will have to be adopted for terms such as "health effects." Standard units and averaging times will have to be adopted in order to compare findings to one another and

to local standards. Problems such as these will intensify as the investigation evolves.

4. Identify the sources of the required data, search them, and identify reports and books which seem responsive to the indicated data requirements. The primary sources of such leads include:

- a. Published abstracts (both general and by specific topic areas).
- b. Available on request from literature search or abstracting services.
- c. Published literature reviews, surveys, and summaries.
- d. Annual indices for relevant journals.

It is necessary to be selective in choosing sources for closer review. There will always be more data to survey than there is time available. Therefore, establish a list of relevant "key" words for search purposes and priorities for selecting materials for review. Also, establish criteria for determining when a piece of literature is worthy of close scrutiny.

After an initial, close review of the materials, define more specifically the information to be extracted from the literature. These descriptors may very well undergo refinement as the literature review progresses and the reader becomes more sophisticated in the relevant content areas.

5. Read the selected materials and identify the desired elements of information. Set up a filing system to aid in retrieving these elements for use and for relating them to their sources.
6. In reviewing the selected materials, discriminate the findings and opinions which are valid and reliable. Some of the problem areas which must be carefully scrutinized and evaluated include:
 - a. In experimental research, is the experimental design adequate? For example, are the controls appropriate? Are the proper statistical methods applied?

- b. Are assumptions reasonable, given what is known about the topic?
 - c. Are the data presented appropriately? For example, do the graphs agree with the findings given elsewhere in the report?
 - d. Do the findings agree with other related findings in other studies?
 - e. Are the conclusions well founded in the reported results and the findings and conclusions of other authors?
7. Identify relevant, locally gathered data; contact the appropriate "in-house" sources; and secure the needed materials. It may be necessary to reduce this data or analyze it further, and then present it in a manner directly relevant to the study in progress. For example, with air quality data for a given contaminant, it may be useful to develop cumulative frequency distributions of daily or hourly concentrations for local monitoring stations. It may also be desirable to express air quality data in terms of geometric means and standard deviations. Additional categories of "in-house" data which may be useful include:
- a. Emission inventory results.
 - b. Engineering data on the sources of specific contaminants.
 - c. Summaries of the findings of permit system and source testing activities concerning the effectiveness of particular control methods.
8. Summarize all of the relevant information elements and present them in a form which is responsive to the objectives of the study.

Skill Requirements

1. Ability to systematically and effectively solve problems or make

decisions. This general skill includes:

- a. Ability to accurately define the problem in terms of objective, desirable outcome.
- b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
- c. Ability to identify and describe potential solutions or approaches for developing solutions.
- d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
- e. Ability to set realistic priorities.
- f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

2. Ability to interpret the general objectives of a literature survey in terms of the specific types of data to be reviewed and summarized. For example, what type of data should be reviewed to support developments of new air quality standards?
3. Ability to communicate effectively with agency technical and scientific personnel to gather and interpret data relevant to literature search objectives.
4. Ability to progressively refine literature search information requirements to accurately reflect data and insights acquired as the review progresses toward its objectives.
5. Ability to identify elements of the literature in a survey which should be standardized, and the ability to develop useful, standardized concepts. One frequently occurring requirement is

to adopt a definition for a term or concept which allows for the greatest degree of generalization and application of findings across studies employing the term or concept. Other examples where standardization will be needed for comparison across studies include:

- a. Measurement techniques
 - b. Units of measurement
 - c. Averaging times
 - d. Criteria for judgments such as the definition of the occurrence of a "health effect"
6. Ability to transform (e.g., using statistical or logical methods) reported findings into a form which is more directly relevant to the objectives of a literature review.
 7. Ability to recognize data trends, insights, and information found in the literature review which are directly relevant to achieving the objectives of the survey.
 8. Ability to quickly and accurately search literature resources for materials relevant to the literature search objectives. This is a process of successive approximations which should rapidly and accurately discard inappropriate materials and identify materials worthy of close scrutiny. Ultimately, this ability permits identification of the most useful materials.
 9. Ability to discriminate the most useful and relevant literature sources to read and integrate into a literature survey. This involves skill in setting up a "key" word system for searching resources and in setting priorities for selecting materials for review.
 10. Ability to integrate the findings of several related published studies to identify trends or identify a consensus as required by literature search requirements.
 11. Ability to evaluate the validity, reliability, and relevance of the findings and opinions reported in technical and scientific literature. Some of the problem areas which must be

to adopt a definition for a term or concept which allows for the greatest degree of generalization and application of findings across studies employing the term or concept. Other examples where standardization will be needed for comparison across studies include:

- a. Measurement techniques
 - b. Units of measurement
 - c. Averaging times
 - d. Criteria for judgments such as the definition of the occurrence of a "health effect"
6. Ability to transform (e.g., using statistical or logical methods) reported findings into a form which is more directly relevant to the objectives of a literature review.
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 9. Ability to discriminate the most useful and relevant literature sources to read and integrate into a literature survey. This involves skill in setting up a "key" word system for searching resources and in setting priorities for selecting materials for review.
 10. Ability to integrate the findings of several related published studies to identify trends or identify a consensus as required by literature search requirements.
 11. Ability to evaluate the validity, reliability, and relevance of the findings and opinions reported in technical and scientific literature. Some of the problem areas which must be

carefully scrutinized and evaluated include:

- a. In experimental research, was the experimental design adequate? For example, were the controls appropriate? Were the proper statistical methods applied?
 - b. Were assumptions reasonable, given what was known about the topic?
 - c. Were the data presented appropriately? For example, do the graphs agree with the findings given elsewhere in the report?
 - d. Do the findings agree with related findings in other studies?
 - e. Were the general conclusions well supported by the reported results and the findings and conclusions of other authors?
12. Ability to design "paper flow" systems to handle and store necessary documentation. The system should be responsive to the quantity of materials to be handled and the agency's ability to utilize state-of-the-art techniques and equipment (e.g., microform, computers).
13. Ability to set up a filing system which will facilitate storage and retrieval of information, references, etc., identified in a literature review.
14. Ability to summarize and report the findings of a literature review in a manner which is responsive to the objectives of the review. For example, if the objective of the review is to identify the health effects of a particular contaminant, one means of presenting the findings is to describe each relevant study in terms of:
- a. Effect reported or investigated
 - b. Exposure concentration
 - c. Exposure duration

- d. Measurement methods and conditions
- e. Reference

Knowledge Requirements

1. Knowledge of the procedures for structuring a literature search and review effort to accomplish given objectives. This includes:
 - a. Use of key word systems
 - b. Information filing systems
 - c. Development of review objectives
2. Background knowledge in areas of air pollution control technology and regulatory methods sufficient to support design and implementation of a literature search and review. The specific knowledge areas required depend upon the objectives of the review and the material to be surveyed. Some general areas typically required include:
 - a. Chemical composition and probable reactions of the concentration.
 - b. The characteristics of standard measurement techniques (e.g., principles of operation, reliability, sensitivity, interference phenomena).
 - c. Industrial processes which are pollution sources.
 - d. Air pollution control device technology.
 - e. The methods and output of specific agency activities (monitoring, emission inventory, source testing).
3. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
4. Knowledge of the published or unpublished sources of information available in a variety of areas relevant to air pollution control and air quality standards. Resources typically used in this task include:
 - a. The output of abstracting services (e.g., References 2, 3, 5, 6, 7, 8, 15, 16, and 17).

- b. Relevant literature reviews (References 1, 4, 10, 11, 12, 13, and 14).
 - c. Journal annual indices (Reference 9).
 - d. Proceedings of technical meetings (Reference 18).
 - e. Agency files and publications.
5. Sufficient background knowledge in the traditional academic disciplines which form the bases for the scientific and technical work reported and are necessary to interpret the usefulness of published materials relevant to air pollution control. These areas include:
- a. Chemistry (e.g., organic, analytical, physical).
 - b. Psychology (e.g., perceptual processes, skill performance).
 - c. Physiology (e.g., sensory processes, respiratory function).
 - d. Statistics (e.g., experimental design, probability theory, the underlying assumptions and uses of parametric and nonparametric statistics).
 - e. Engineering (e.g., chemical, mechanical)
6. Knowledge of specific procedures for evaluating the reliability, validity, and relevance of published findings and conclusions found in a literature search effort.
7. Knowledge of the accepted techniques for planning and presenting written or spoken communications, such as technical reports, public presentations, and formal correspondence.

References

1. California Air Resources Board. Ambient air quality standards. January 1970.
2. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: Municipal incineration-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-92.

3. Environmental Protection Agency, Air Pollution Control Office. Air pollution aspects of emission sources: nitric acid manufacturing-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-93.
4. Environmental Protection Agency, Air Pollution Control Office. Air quality criteria for nitrogen oxides. Washington, D. C.: Author, January 1971. No. AP-84.
5. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: An annotated bibliography. Part I. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
6. Environmental Protection Agency, Air Pollution Control Office. Photochemical oxidants and air pollution: An annotated bibliography. Part II. Research Triangle Park, North Carolina: Author, March 1971. No. AP-88.
7. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: Cement manufacturing-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-95.
8. Environmental Protection Agency, Office of Air Programs. Air pollution aspects of emission sources: Electric power production-a bibliography with abstracts. Research Triangle Park, North Carolina: Author, May 1971. No. AP-96.
9. Journal of the Air Pollution Control Association. Vol. 20, No. 1, January 1970, p. i-vi. Author and title index for Volume 19 (January through December 1969).
10. National Air Pollution Control Administration. Air quality criteria for carbon monoxide. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-62.
11. National Air Pollution Control Administration. Air quality criteria for hydrocarbons. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, March 1970. No. AP-64.

12. National Air Pollution Control Administration. Air quality criteria for particulate matter. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-49.
13. National Air Pollution Control Administration. Air quality criteria for photochemical oxidants. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, March 1970. No. AP-63.
14. National Air Pollution Control Administration. Air quality criteria for sulfur oxides. Washington, D. C.: U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, January 1969. No. AP-50.
15. National Air Pollution Control Administration. Hydrocarbons and air pollution: An annotated bibliography. Part I. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, October 1970. No. AP-75.
16. National Air Pollution Control Administration. Hydrocarbons and air pollution: An annotated bibliography. Part II. Raleigh, North Carolina: U. S. Department of Health, Education, and Welfare, Public Health Service, Environmental Health Service, October 1970. No. AP-75.
17. National Air Pollution Control Administration. NAPCA abstract bulletin, Vol. 1, No. 9, Supplement 4. Research Triangle Park, North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service.
18. U. S. Department of Health, Education, and Welfare; Public Health Service, National Center for Air Pollution Control. Proceedings: The third national conference on air pollution, Washington, D. C., December 12-14, 1966. PHSP #1649.

Special Staffing Guidance

The assignee responsible for this task should be a senior Program Planning and Development Specialist. He should have a Bachelor's Degree in either Engineering or Chemistry and have had at least three years' experience working in agency activities including:

1. Air monitoring
2. Source testing
3. Laboratory analysis for either air monitoring or source testing
4. Emission inventory
5. Episode control

In addition to these requirements, it is advisable that the assignee have completed graduate work in a scientific area in which he has conducted and evaluated individual research.

Development of New or Modified Regulations

Task Overview

There is a continuing need for the generation of new and modified regulations as the state-of-the-art in air pollution control and the political environment evolves. The task of developing the needed regulations is a complex one which requires inputs from members of the technical, legal and management staffs within the agency. The following general task description provides a context for identification of representative skill and knowledge requirements for this activity.

Occupational Category: Program Planning and Development Specialist (Senior)

Task Description

1. Describe the need for the new or amended regulations in terms of the characteristics of the current situation which demand attention. For example, the type of situational factors may include:
 - a. A new federal ambient air quality standard is promulgated for a specific contaminant.
 - b. Current emission standards are not achieving the desired effect on air quality.
 - c. A breakthrough in air pollution control technology has occurred which makes a new generation of emission standards achievable.
 - d. There has been an excessive number of single-chamber incinerator smoke violations.
 - e. Scientific evidence has been published showing significant health effects due to a contaminant which is currently emitted without being controlled by regulations.
 - f. The penalty for a specific violation does not appear to be having a significant deterrent effect.

The situational factors which suggest a need for new or modified regulations must be described at a level of detail which will support development of the required legislation.

2. Identify the general features of required new or modified regulations. The features should, if enacted, provide some means of correcting conditions which signal the need for new or modified regulations (identified earlier). Such general features could include:
 - a. New or modified emission standards.
 - b. Modification in an existing agency procedure (e.g., a change in the permit system fee schedule).
 - c. Inclusion in regulations of nomographs and data tables to enable potential sources to, in part, evaluate their own emission levels.
 - d. Revision of a regulation which is apparently vague and, therefore, difficult to interpret and enforce.
 - e. Changes in the penalties for specific types of violations.
 - f. Revisions of or additions to the definitions in the regulations.
 - g. Additions, deletions, or modifications to exemptions (e.g., to basic equipment covered under the plan review/permit regulations).
 - h. Modification of the legally defined role of quasi-legislative or quasi-judicial bodies such as variance boards, rule-making bodies, and hearing boards).
 - i. Additions, deletions, or modifications of specific prohibitions (e.g., open burning regulations, prohibition of single-chamber incinerators, etc.).
3. Identify the specific background information which must be gathered before the required regulation can be drafted. The types of required data may include:
 - a. What emission standard is needed to produce a specific ambient air quality level for a specific contaminant?

Consideration will have to be given to diffusion modeling, emission inventory, successful applications at other agencies, local background levels, and special cases such as extra-tall stacks.

- b. What are other agencies doing to enforce their open burning regulations?
 - c. What design characteristics can be standardized in a large capacity incinerator to assure reduced emissions?
 - d. What advantages would accrue for handling emergencies as a result of extending the boundaries of agency coverage to new areas or air basins.
 - e. What is the current state-of-the-art in control of emissions from coke quenching? What emission standards are feasible and enforceable?
4. Gather the information necessary to prepare the required regulation. This might include activities such as:
- a. Review of federal requirements.
 - b. Review, critique, and summarization of relevant technical and scientific literature.
 - c. Experimental research.
 - d. Discussions or correspondence with information sources such as other agencies, researchers, polluters, and control equipment manufacturers.
5. Initiate a continuing interaction between the agency and representatives of the constituency directly affected or interested in the proposed regulation. The purposes of such an interaction can include:
- a. Soliciting technical assistance in developing the regulation.
 - b. Assuring that the developing regulation is fair, feasible, responsive to the needs of the public, and feasible to implement.

- c. Developing the type of rapport with industry and the public needed to adopt the regulation, enforce it, and implement it effectively.

As a result of these interactions, modifications to the initial draft may have to be developed in response to pressures, needs, or requests of the groups surveyed.

6. Assist the attorneys in drafting the proposed regulation. The wording of the draft should adequately reflect the technical requirements identified earlier and the legal refinements needed to make the rule constitutional and enforceable. Care should be taken to assure that the legally acceptable draft does not compromise the initial control intentions of the agency.
7. Solicit comments and criticism from selected members of the agency staff. Evaluate the ensuing comments and modify the draft accordingly. Consult with attorneys to make language changes and to verify that the second draft is legally acceptable.
8. Follow the local procedure for presenting, justifying, and answering questions concerning the proposed regulation prior to formal adoption proceedings. The presentation may be to groups including:
 - a. The general public.
 - b. Representatives of affected industries, businesses, and institutions.
 - c. Advisory board.
 - d. Rule-making bodies (e.g., board of health, state or local legislature, or county commissioners).

At such a presentation, points may be raised which will have to be settled through negotiation or revision to the proposed regulation.

9. If necessary, possible, or ethical, lobby for formal adoption of the final draft of the proposed regulation. This may require activities including:
 - a. A public information program (in print, television, radio).

- b. Personal contact and discussions with rule makers, industrialists, representatives of citizen groups, or influential politicians.
- c. Further negotiation and revision to the proposed regulation. For example, significant revision might be required such that the resulting measure merely "sets the stage" for later adoption of the originally desired regulation.

Skill Requirements

- 1. Ability to identify and describe existing conditions which signal the need for revision to existing regulations or agency activities. Such conditions may include:
 - a. A new federal ambient air quality standard is promulgated for a specific contaminant.
 - b. Current emission standards are not achieving the desired effect on air quality.
 - c. A breakthrough in air pollution control technology has occurred which makes a new generation of emission standards achievable.
 - d. There has been an excessive number of single-chamber incinerator smoke violations.
 - e. Scientific evidence has been published showing significant health effects due to a contaminant which is currently emitted without being controlled by regulations.
 - f. The penalty for a specific violation does not appear to be having a significant deterrent effect.
- 2. Ability to effectively chair public or private meetings intended to generate questions, comments, criticisms, or recommended modification to proposed regulations or activities.

3. Ability to communicate effectively in written or spoken form with representatives of industry, citizen groups, or politicians to accomplish functions including:
 - a. Solicit criticisms, expectations, demands, and supporting technical information relevant to development of new regulations or agency policy.
 - b. "Sell" the agency's position on the proposed regulation.
 - c. Negotiate a compromise version of the regulation which meets the requirements of the agency and satisfies the pressure groups.
 - d. Develop an episode control system.
 - e. Aid in development of local control program.
4. Ability to interact with attorneys in developing acceptable language and content for proposed regulations, modifications to current regulations, and in developing model ordinances. This requires skill in communicating the needs of the agency to the attorney and in helping him to evaluate the degree to which the legally acceptable form satisfies the original intent of the effort.
5. Ability to identify the general characteristics of a new or revised regulation which provide a means for correcting current conditions which signal the need for new or modified regulations. Such general types of additions or modifications could include:
 - a. New or modified emission standards.
 - b. Modification in an existing agency procedure (e.g., a change in the permit system fee schedule).
 - c. Inclusion in regulations of nomographs and data tables to enable potential sources to, in part, evaluate their own emission levels.
 - d. Revision of a regulation which is apparently vague and, therefore, difficult to interpret and enforce.

- e. Changes in the penalties for specific types of violations.
 - f. Revisions of or additions to the definitions in the regulations.
 - g. Additions, deletions, or modifications to exemptions (e.g., to basic equipment covered under the plan review/permit regulations).
 - h. Modification of the legally defined role of quasi-legislative or quasi-judicial bodies such as variance boards, rule-making bodies, and hearing boards).
 - i. Additions, deletions, or modifications of specific prohibitions (e.g., open burning regulations, prohibitions of single-chamber incinerators, etc.).
6. Ability to systematically and effectively solve problems or make decisions. This general skill includes:
- a. Ability to accurately define the problem in terms of objective, desirable outcome.
 - b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
 - c. Ability to identify and describe potential solutions or approaches for developing solutions.
 - d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
 - e. Ability to set realistic priorities.
 - f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
 - g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

7. Ability to interpret existing state or federal legislation and regulations relevant to the state's possible role in developing local air pollution control programs.
8. Ability to communicate effectively with agency personnel in working on operational problems involving enforcement, engineering, or technical activities of the agency.
9. Ability to identify the specific background information which must be gathered before a new or modified regulation can be drafted. The types of required data may include:
 - a. What emission standard is needed to produce a specific ambient air quality level for a specific contaminant? Consideration will have to be given to diffusion modeling, emission inventory, successful applications at other agencies, local background levels, and special cases such as extra-tall stacks.
 - b. What are other agencies doing to enforce their open burning regulations?
 - c. What design characteristics can be standardized in a large capacity incinerator to assure reduced emissions?
 - d. What advantages would accrue for handling emergencies as a result of extending the boundaries of agency coverage to new areas or air basins?
 - e. What is the current state-of-the-art in control of emissions from coke quenching? What emission standards are feasible and enforceable?
10. Ability to direct or perform the tasks required to gather technical information required to develop a draft regulation. The tasks to be performed may include:
 - a. Literature reviews
 - b. Empirical research
 - c. Survey of the opinions of experts
 - d. Review of the experiences of agencies who have dealt with similar problems.

11. In establishing working policy and objectives for an agency or agency element, the ability to accurately identify:
 - a. What its constituency (i.e., the public and industry) expects and is willing to accept.
 - b. If the technological state-of-the-art has developed sufficiently to support proposed agency efforts.
12. Ability to judge current, local political or economic conditions and react to them accordingly in developing agency activities or policy.
13. In interactions with industry or citizen groups, the ability to take a position based upon accurate assessment of the agency's capacity to perform its functions effectively. Also, the ability to identify "pressure" points which could be used to improve the agency's bargaining position. In the case of industry, such points include:
 - a. Sensitivity to antitrust considerations.
 - b. Concern for the effects of public relations (i.e., "poor press").
 - c. Knowledge that if an agreement is not reached with the agency, a more technically naive body (e.g., a state legislature) might formulate unreasonably stringent rules.
14. Ability to evaluate criticisms and suggestions responsive to a draft of a new regulation and to use these comments to further develop the draft
15. Ability to prepare and rehearse a presentation to be made before a court, hearing board, or other legal or quasi-legal body.
16. Ability to assist in the development and implementation of a program to lobby for adoption of a proposed regulation. Such programs can include:
 - a. Public information presentations.
 - b. Personal contacts and discussions with rule makers, industrial representatives, citizen groups, etc.
 - c. Negotiation and compromise.

Knowledge Requirements

1. Knowledge of state and federal regulations and standards which suggest or prescribe the characteristics of local control programs.
2. Knowledge of the alternative control and regulatory functions which may be performed by local agencies.
3. Knowledge of the types of situations which can occur and which signal the need for developing new regulations or amending current regulations. Such conditions include:
 - a. A new federal ambient air quality standard is promulgated for a specific contaminant.
 - b. Current emission standards are not achieving the desired effect on air quality.
 - c. A breakthrough in air pollution control technology has occurred which makes a new generation of emission standards achievable.
 - d. There has been an excessive number of single-chamber incinerator smoke violations.
 - e. Scientific evidence has been published showing significant health effects due to a contaminant which is currently emitted without being controlled by regulations.
 - f. The penalty for a specific violation does not appear to be having a significant deterrent effect.
4. Knowledge of the recommended principles for developing, maintaining, and effectively using an interaction with interest groups in development of new regulations or in the performance of routine agency activities.
5. Knowledge of the technical areas of air pollution control and regulatory technology to support development of new or modified regulations.
6. Knowledge of the procedure for developing draft regulations which are responsive to identified needs.

7. Knowledge of the methods available for gathering the background information needed to develop new or modified regulations. Also, knowledge of the method for selecting the appropriate information gathering method.
8. Knowledge of the procedure for preparing a presentation to be given before a court, hearing board, or other legal or quasi-legal body.
9. Knowledge of legally acceptable language and the methods used by attorneys to "translate" lay versions of a regulation into a form appropriate for adoption.
10. Knowledge of local procedures for presenting and defending proposed legislation of regulations prior to formal adoption proceedings.
11. Knowledge of the accepted techniques for planning and presenting written or spoken communications, such as technical reports, public presentations, and formal correspondence.
12. Knowledge of ethical and effective methods for lobbying or negotiating with legislators to speed up adoption of a desired regulation.
13. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
14. Detailed and broad knowledge of the local air pollution control regulations to support development of new regulations.

Special Staffing Guidance

The individual assigned to this task should be a senior Program Planning and Development Specialist. The assignee should have broad experience in agency enforcement, regulatory, and control activities. It is suggested that the assignee have a Bachelor's Degree in Engineering and have had at least five years' experience in a line position working in either Engineering or Enforcement functions of agency activity.

While in Program Development work, the assignee should have had experience dealing with the following areas of the agency's constituency:

1. Local legislators and other government officials
2. Attorneys
- c. Representatives of industry affected by agency regulations
- d. Citizen groups
- e. News media

Support of Development of Local Control Programs

Task Overview

Many state air pollution control agencies support the development of locally administered control programs designed to augment the state's efforts. The nature of these local programs generally varies along dimensions including:

1. Size of the geographic area covered. In New Jersey local programs are designed for small municipalities. In California large multi-county air basin-type subdivisions are covered.
2. Scope of control activities. Since the local programs are designed to augment the state program, the scope of local programs is a function of the comprehensiveness of the state's effort. For example, in California the state agency's primary responsibility is mobile sources, with responsibility for stationary sources delegated to local programs. Therefore, local programs are quite comprehensive and can include a wide variety of agency services. On the other hand, in New Jersey the state's program is sufficiently comprehensive that local programs have greatly limited responsibilities.
3. Procedure for development of local programs. In New Jersey a model ordinance has been developed for local air pollution control programs. In developing their codes, local programs are encouraged to copy the model program. This type of conformity works because of the limited activities performed at the local level. However, in California, where each local program (or district) is responsible for comprehensive coverage of all the stationary sources, the programs are designed specifically to suit the problems of the area. Thus, there is a relatively high degree of variability across the local programs.

The following task description provides a representative work context for the skills and knowledge typically required to support development of local air pollution control programs.

Occupational Category: Program Planning and Development Specialist (Senior)

Task Description

1. Identify the desired role for local programs in air pollution control. The role may be fixed by law or may be a policy decision for high level management of the state agency. The decision will be based on characteristics of the state's control program, including:
 - a. Its current and projected resources as compared to the size and complexity of its jurisdiction.
 - b. The overall objectives or philosophy of the state agency with regard to controls for the state. For example, the state will work toward control of mobile sources with stationary sources controlled by local programs.
 - c. The effectiveness of the state's program. Specific elements in the state's existing program may be substantially strengthened by work done on those elements at the local level.
2. In cases where local program design requirements can be flexible, assist the responsible local authorities in determining which control and regulatory activities they should seek to implement. One method for making this determination is to coordinate an emission inventory of the area covered and identify the current and potential pollution problems. Such a study may be conducted by state or local personnel and may include:
 - a. Description of the area in terms of factors which contribute to air pollution; for example, geographical, topographical, and meteorological characteristics.
 - b. Description of the types and number of pollution sources in the area (industrial, commercial, residential, public).
 - c. Air quality data.
 - d. Emission inventory results.

By reviewing the findings of the study and comparing them with state and federal regulations and suggested standards, it will be possible to identify the type of local program required currently and in the reasonably foreseeable future.

3. Identify and prepare the materials and technical assistance local authorities will require to identify the control functions they must perform and the type of regulations they will have to adopt. These types of materials will include:
 - a. Model ordinances and regulations.
 - b. Materials describing the operational requirements for control techniques, including:
 - 1) Permit systems
 - 2) Enforcement techniques (e.g., periodic inspections, patrolling)
 - 3) Sample emission standards
 - 4) Monitoring system requirements
 - 5) Complaint investigation
 - 6) Variance and hearing board procedures
4. Determine whether the proposed local program is appropriate for controlling the current and predicted air pollution problems in the area.
5. Assist the local authorities in identifying the level of personnel, equipment, materials, and other facilities required for the desired program. Trade-offs and reductions in plans may be required to bring costs into an acceptable range.
6. Assist local authorities in preparing their regulations and rules and evaluate their draft materials. If model regulations are used, the evaluation is limited to examination of the differences between the proposed and the model materials. In cases where no model is provided, detailed legal assistance is required.

7. Coordinate or provide technical assistance to the local agency on a continuing basis until it has reached a desirable level of self-sufficiency. Providing assistance can take several forms, including:
 - a. Training programs (e.g., in smoke reading, inspection techniques, equipment maintenance, administrative or management procedures).
 - b. Aid in selection of personnel to staff the program.
 - c. Periodic formal evaluation and feedback concerning the local program's performance.
 - d. Field trips by state or local personnel to the counterpart's agency for direct observation of procedures or instructive discussions.

Skill Requirements

1. Ability to effectively chair public or private meetings intended to generate questions, comments, criticisms, or recommended modification to proposed regulations or activities.
2. Ability to communicate with high level agency management in working to develop a statewide control strategy which incorporates local programs to augment the state's efforts.
3. Ability to communicate effectively with responsible local air pollution control officials in written and spoken form. These communications may deal with areas including:
 - a. The need for local programs and their conformity with the state's models.
 - b. Reduction of political influence in development of local programs.
4. Ability to interpret existing state or federal legislation and regulations relevant to the state's possible role in developing local air pollution control programs.
5. Ability to identify the contaminants that a proposed episode control system should attempt to limit.

6. Ability to coordinate a systematic effort to determine the requirements for a local program. This ability includes skills required to:
 - a. Design an adequate study of the pollution problems of the area.
 - b. Supervise collection, analysis, and presentation of the data from the requirements study.
 - c. Evaluate the findings and make realistic conclusions about the type of program that is required.
7. Ability to select from alternative control and regulatory activities those functions appropriate to the needs of and restrictions on local programs.
8. Ability to communicate effectively in written or spoken form with representatives of industry, citizen groups, or politicians to accomplish functions including:
 - a. Solicit criticisms, expectations, demands, and supporting technical information relevant to development of new regulations or agency policy.
 - b. "Sell" the agency's position on the proposed regulation.
 - c. Negotiate a compromise version of the regulation which meets the requirements of the agency and satisfies the pressure groups.
 - d. Develop an episode control system.
 - e. Aid in development of local control program.
9. Ability to communicate effectively, orally and in writing, with technical personnel (e.g., computer operators, graphic artists, engineering assistants) and respondents contributing to emission inventory data collection.
10. Ability to judge current, local political or economic conditions and react to them accordingly in developing agency activities or policy.

11. Ability to systematically and effectively solve problems or make decisions. This general skill includes:

- a. Ability to accurately define the problem in terms of objective, desirable outcome.
- b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
- c. Ability to identify and describe potential solutions or approaches for developing solutions.
- d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
- e. Ability to set realistic priorities.
- f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.
- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

- 12. Ability to communicate effectively with agency personnel in working on operational problems involving enforcement, engineering, or technical activities of the agency.
- 13. Ability to interact with attorneys in developing acceptable language and content for proposed regulations, modifications to current regulations, and in developing model ordinances. This requires skill in communicating the needs of the agency to the attorney and in helping him to evaluate the degree to which the legally acceptable form satisfies the original intent of the effort.

14. Ability to define the requirements for, and coordinate preparation of the technical assistance needed to support personnel administering the local program. This assistance can take the form of:
 - a. Training (formal and on-the-job).
 - b. Manuals, procedures, handbooks, and other performance aids.
 - c. Field trips.
 - d. Site trips by state personnel to provide on-the-spot evaluation and feedback.
15. Ability to evaluate the potential effectiveness of the proposed local programs. This skill includes ability to identify and correct loopholes in the law or regulations.
16. Ability to recognize areas where a proposed local program can be cut to an acceptable level of cost while minimizing the resultant reduction in capability to achieve its objectives.
17. Ability to gather appropriate background data and then estimate the resources needed to administer a proposed local program.
18. Ability to coordinate an on-going evaluation of local agency internal training, procedure development, and external activities (e.g., performance of control and regulatory efforts).
19. Ability to develop or assist in development of job specifications and selection criteria which can be used in a personnel recruitment program.
20. Ability to use agency files, source process data, and other methods to develop the appropriate background data to initiate an inspection of a stationary source.

Knowledge Requirements

1. Sufficient knowledge of the activities, resources, and degree of success of the state agency to work with high level management

to develop a control strategy which utilizes local programs. This decision also includes knowledge of:

- a. The enabling legislation which established the state agency.
 - b. The local agency program strategies used in other states and their relative success.
 - c. The scope of control and regulatory activities used by air pollution control organizations, and the conditions under which they are or are not effective (e.g., permits, periodic inspections, air monitoring, episode control).
 - d. The types of air pollution problems in each of the areas of the state, and the types of control efforts these problems require.
2. Sufficient knowledge of the law to work with attorneys in drafting or evaluating model regulations and ordinances. The regulations and ordinances should support an adequate control program, should be enforceable, and should be relatively free of loopholes.
 3. Sufficient knowledge of the basic parameters of the problem of local air pollution to coordinate design, implementation, and evaluation of a study to identify requirements for a local program. The study can include elements such as:
 - a. Analysis of geographic, topographic, meteorological, and demographic features of the area which are relevant to air pollution.
 - b. The current and anticipated population of air pollution sources of all types.
 - c. Ambient air quality.
 - d. Emission inventory findings.
 4. Knowledge of the alternative control and regulatory functions which may be performed by local agencies.

5. Knowledge of state and federal regulations and standards which suggest or prescribe the characteristics of local control programs.
6. Knowledge of the resource documentation available which recommends or illustrates the format and content of an emission inventory (e.g., References 1, 3, 5, and 6).
7. Knowledge of the criteria for an effective and complete emission inventory.
8. Knowledge of representative data collection, verification, and processing systems that have been used or are currently being used in emission inventory projects. Also, knowledge of each system's relative merits, weaknesses, and the reasons for these conditions.
9. Knowledge of the types of materials and assistance local program personnel may require to identify the control functions they can perform and the regulations they might adopt.
10. Knowledge of basic air pollution control agency functions at a level of detail sufficient to guide local authorities in designing their programs. The functions include:
 - a. Permit systems
 - b. Inspections
 - c. Emission standards
 - d. Monitoring system requirements
 - e. Complaint investigation
 - f. Variance and hearing board procedures
11. Knowledge of criteria and techniques for judging the design or performance adequacy of proposed local programs.
12. Knowledge of the types and extent of resources required to implement programs at the local level. Resources of the following kinds should be evaluated in terms of quantity and costs:
 - a. Equipment (operational, maintenance, back-up)

- b. Working materials
 - c. Personnel
 - d. Working facilities (office space, garages, etc.)
13. Knowledge of principles and procedures for identifying training requirements, preparing training objectives, and developing a program to achieve the objectives.
 14. Knowledge of the procedures and materials used to apply for air pollution control program support from the federal government. Reference 7 describes the aid available under the Air Quality Act of 1967. Reference 2 provides instructions for grant application. Also, knowledge of the standard operating reports or periodic statements required by funding agencies.
 15. Knowledge of principles and procedures used for identifying personnel requirements and selection criteria and for using them in a selection program. See Reference 4 for relevant information.
 16. Knowledge of accepted procedures and techniques for developing job specifications and job classification schemes.

References

1. Air Pollution Control District. Profile of air pollution control. Los Angeles: County of Los Angeles, 1971.
2. Environmental Protection Agency, Air Pollution Control Office. Application for air pollution control program grant. Instructions. February 1971.
3. Environmental Protection Agency. Requirements for preparation, adoption, and submittal of implementation plans. Appendices D, E, and F. Federal Register, Vol. 36, No. 158, Saturday, August 14, 1971.
4. McMurry, R. Tested techniques of personnel selection. Chicago: Dartnell Corporation.
5. National Air Pollution Control Administration. Nationwide inventory of air pollutant emissions, 1968. Raleigh,

North Carolina: U. S. Department of Health, Education, and Welfare; Public Health Service, Environmental Health Service, August 1970.

6. Ozolins, Guntis, & Smith, Raymond. A rapid survey technique for estimating community air pollution emissions. PHSP #999-AP-29, October 1966.
7. U. S. Department of Health, Education, and Welfare; Public Health Service, Consumer Protection and Environmental Health Service, National Air Pollution Control Administration. Air pollution control program support under the air quality act of 1967. Public Law 90-148. December 1968.

Special Staffing Guidance

The individual assigned to assisting in development of local programs (within a coordinated state system) should be a senior Program Planning and Development Specialist. The individual selected should have broad experience in control agency functions, planning, personnel development systems, and strong communications skills across a variety of audiences.

Senior status is also important from a credibility point of view. In order to secure the required cooperation from local officials, citizen groups, and industry, it will be helpful if the representative of the state agency has accepted technical and academic credentials.

It is suggested that the assignee have a Bachelor's Degree in Engineering and have had a minimum of five years' experience working in agency engineering or enforcement efforts. Also, the assignee should have had several years' experience in Program Planning and Development tasks, working in areas including:

1. Agency personnel development programs (e.g., training, performance review systems)
2. Regulation development
3. Resources administration

Preparation of a Public Information Presentation

Task Overview

The Public Information Specialist has a variety of responsibilities, including arranging for agency members to speak at meetings, scheduling and making arrangements for visitors to the agency, maintaining the agency library, and answering complaints. However, the primary responsibility of the public information officer within an agency is to prepare information concerning agency activities and make it available to the public and other concerned groups. The information is typically presented in printed form, but it can take the form of a film, lecture, or television appearance. Regardless of the medium used, the same general procedure must be followed in preparing the material. Similarly, the underlying skills and knowledge required to develop a presentation do not vary a great deal as a function of media. The task described below is a general version of the task of preparing materials for consumption by the public.

Occupational Category: Public Information Specialist

Task Description

1. Identify the general topic or content area to be covered in the presentation and the audience to be addressed. Describe the audience's information requirements or the basic message or facts the agency seeks to communicate. These factors make up the basic information content requirements for the presentation.
2. Identify and describe the characteristics of the situation which might constrain the choice of media. Consider factors including:
 - a. Is the medium optional?
 - b. What are the cost limitations?
 - c. What are the time limitations or deadlines?
 - d. Are other personnel required to develop the presentation?
When will they be available?

- e. Is the required content information readily available, or are there delays involved with securing it in a usable form?
- 3. Identify and describe the characteristics of the audience and content which will influence the choice of media. Consider characteristics including:
 - a. Is the audience more likely to attend to one medium than another? For example, the audience generally does not voluntarily pick up and read pamphlets. The one printed item the majority reads regularly is the newspaper.
 - b. Are there aspects of the content which are best communicated using methods such as:
 - 1) Visual presentation
 - 2) Graphics
 - 3) Color
 - 4) Movement
- 4. Select the medium for the presentation.
- 5. Identify the technical information required for the presentation and identify the source of such material. Sources will include:
 - a. Reference materials (e.g., texts, data records, agency files)
 - b. Experts (e.g., agency personnel, legislators, attorneys)
 - c. Previous presentations
- 6. Determine the appropriate level of detail required for the presentation. The level of detail selected will depend on factors including:
 - a. Audience reading level, interest, and relevant previous experience.
 - b. Detail required to communicate the desired message or fact without confusing the issue.

- c. Availability of data. Information beyond a particular level of detail just may not be available.
- 7. Identify the need for graphic arts support, define the requirements for the materials, and have them prepared. This may require evaluating techniques and draft products.
- 8. Prepare draft copy. Use style, format, and content appropriate to the objectives of the presentation.
- 9. Submit draft to criticism, evaluate responses, and prepare final copy. This may go through several iterations before the material is finalized.
- 10. Identify final product characteristics in terms which are at a level of detail sufficient to support production to meet those requirements. Interact with production personnel:
 - a. Establish production schedule.
 - b. Define production quantities.
 - c. Define quality criteria.
 - d. Settle on the technical characteristics of final product (e.g., type face, paper weight and color, size, format, etc.).
- 11. Evaluate final product.
- 12. Make preparation for distribution or presentation of information. This may require interaction with individuals such as:
 - a. Newspaper personnel
 - b. Radio/TV personnel
 - c. Meeting coordinators
 - d. Film distributors

Skill Requirements

- 1. Ability to quickly and accurately search literature resources for materials relevant to the literature search objectives.

This is a process of successive approximations which should rapidly and accurately discard inappropriate materials and identify materials worthy of close scrutiny. Ultimately, this ability permits identification of the most useful materials.

2. Ability to summarize and report the findings of a literature review in a manner which is responsive to the objectives of the review. For example, if the objective of the review is to identify the health effects of a particular contaminant, one means of presenting the findings is to describe each relevant study in terms of:
 - a. Effect reported or investigated.
 - b. Exposure concentration.
 - c. Exposure duration.
 - d. Measurement methods and conditions.
 - e. Reference.
3. Ability to systematically and effectively solve problems or make decisions. This general skill includes:
 - a. Ability to accurately define the problem in terms of objective, desirable outcome.
 - b. Ability to accurately and completely identify the elements of the situation which affect selection or development of a solution.
 - c. Ability to identify and describe potential solutions or approaches for developing solutions.
 - d. Ability to accurately define the relationships between these elements and the alternative solutions to the problem. This includes "trade-offs."
 - e. Ability to set realistic priorities.
 - f. Ability to estimate with a reasonable level of confidence the probabilities of successful solution for each alternative solution.

- g. Ability to maximize positive payoff by selecting the most effective and least costly solution.

Tasks requiring this ability often may have to be accomplished under a high degree of time stress and under public scrutiny.

- 4. Ability to make public presentations.
- 5. Ability to identify the information the public should have or requires to satisfy a particular need. This includes the ability to determine the appropriate level of detail for factual material. The level of detail selected will depend on factors including:
 - a. Audience reading level, interest, and relevant previous experience.
 - b. Detail required to communicate the desired message or fact without confusing the issue.
 - c. Availability of data. Information beyond a particular level of detail just may not be available.
- 6. Ability to accurately transform and then clearly present technical content in a manner which effectively communicates to the public the appropriate concepts, facts, and images. For example, in describing a daily air pollution index generated by the agency, technical material concerning air monitoring equipment, pollutant characteristics, and criterion levels must be made understandable and interesting to the audience. In this example, and in most public information presentations, arousing and maintaining the audience's interest and concern for the technical material goes hand-in-hand with explaining the concepts clearly.
- 7. Ability to maintain working contacts with individuals and groups who can provide information or support for a public information program. Such groups or individuals include:
 - a. Citizen groups
 - b. News media personnel

- c. Government officials (e.g., legislators, public policy makers)
 - d. Business and industrial groups
 - e. Air pollution control technical information sources (e.g., local experts)
8. Ability to assist in development of a public information policy.
 9. Ability to discuss technical and policy issues with relevant agency personnel and other professionals for the purpose of securing needed facts and explanations to use in a public information presentation. For example, in developing a presentation on health effects of various pollutants, detailed discussions with agency chemists and public health scientists might be required to secure the appropriate information. It is necessary that the writer be able to get the required information accurately and quickly.
 10. Ability to prepare required public information copy and graphics to meet established deadlines. Because of the number of interrelated activities (each having its own deadline) required to produce a public information presentation, it is necessary that a minimum of delay be imposed by the writer.
 11. Ability to select the media and format best suited to the characteristics of the material, audience, and objectives of a public information presentation. Constraints such as costs, time, etc., must be factored into this judgment.
 12. Ability to work with production specialists in generating a public information presentation. In these interactions, it is generally necessary to define desired product characteristics, evaluate suggestions, and supervise development of the product. Typically, interactions are required with:
 - a. Graphic arts personnel
 - b. Printers

- c. Film producers
 - d. Media specialists (e.g., display designers)
13. Ability to secure data required for a public information presentation using agency files, technical reports, and other relevant documentation.
 14. Ability to evaluate criticisms and suggestions responsive to a draft public information presentation and to use these comments to further develop the draft.
 15. Ability to utilize agency records (e.g., complaint files, plan review files, variance board meeting transcripts) in developing a public information presentation.

Knowledge Requirements

1. Knowledge of the procedures for structuring a literature search and review effort to accomplish given objectives.
This includes:
 - a. Use of key word systems
 - b. Information filing systems
 - c. Development of review objectives
2. Knowledge of the accepted techniques for planning and presenting written or spoken communications, such as technical reports, public presentations, and formal correspondence.
3. Knowledge of systematic approaches which are useful for problem solving and planning of work activities (e.g., the "systems" approach to design).
4. Knowledge of the principles and procedures for selecting the media and format for presentation of information to the public. This involves knowledge of the types of media and format available and the relative advantages of each (including cost and production time factors).

5. Basic knowledge of the activities of the air pollution control effort to support development of public information presentations. This knowledge includes:
 - a. Types of pollutants and their effects
 - b. Control devices
 - c. Processes and equipment which emit pollutants
 - d. Enforcement efforts and their effects
 - e. Future plans
 - f. Agency codes and regulations
 - g. The enabling legislation
 - h. Specific agency activities (e.g., episode control, plan review, emission inventory, complaint handling, inspection)
6. Knowledge of the sources for reference data and other basic materials required for preparation of a public information presentation (e.g., film libraries and periodicals).
7. General knowledge of the methods used by production personnel who will be involved in developing a public information presentation. This knowledge should be detailed enough that it is possible to define appropriate production criteria and to evaluate the efforts of production personnel. The production areas include:
 - a. Graphic arts (see Reference 3)
 - b. Printing
 - c. Film making
 - d. Publication design
 - e. Sound product (e.g., mixing)
8. Knowledge of the means by which public information can be distributed on a large scale and the methods by which materials can be incorporated in these media. Reference 1 is used in this regard.

9. Knowledge of the journalistic techniques and styles (see Reference 2) commonly used in preparation of public information.
10. Knowledge of procedures for maintaining contact with the elements of the agency's working context which affect or are affected by its performance. These elements include:
 - a. The public sector.
 - b. The industrial/commercial community.
 - c. Local governmental and quasi-governmental bodies which interface with agency activities (e.g., advisory board, variance board, public health department).
 - d. Relevant state or federal agencies.

The purpose of maintaining contact with the above is to monitor the agency's progress, limitations, and areas of possible extension of its activities.

11. Knowledge of local regulations relevant to the objectives of the public information function. The Public Information Specialist should have a background knowledge of areas of regulations including:
 - a. Smoke density and opacity standards.
 - b. Objectives and requirements of the plan review/permit system.
 - c. Objectives, requirements, and operation of the episode control system.
 - d. Function and operation of the variance board or appeals board.
 - e. Local controls on emissions and open burning.

References

1. Ayer, N. W., & Sons. Directory of newspapers and periodicals. Philadelphia: Author, West Washington Square, 1970.

2. Ayer, N. W., & Sons. Public relations and publicity style book.(?) Philadelphia: Author, West Washington Square.
3. Biegeleisen, J. I. Art directors' workbook of type faces, for artists, typographers, letterers, teachers, and students. New York: Arco Publishing Co., 219 Park Avenue South, 10003.